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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Response to Amendment

Amendment filed 8/3/10 will not be entered because dependent claims would require further search an/or consideration, as they did not depend on the limitations of newly amended claims 1 and 18.

Response to Arguments

While the deagglomeration step of amended claim 1 {amendment not entered} is not present in the disclosure of Jones et al. (US '463), claim 1 is a product by process claim and Jones et al. (US '463) discloses donut shaped fillers and binder {see office action, 3/2/10). The method of claim 18 including the deagglomeration step appears to overcome the rejection of record, however, newly amended claims 1 and 18 would require further search and/or consideration.

The rejection of claims 1-18 based upon Jones *et al.* (US 2002/0193463); or Jones *et al.* (US 2002/0193463) in view of Heindl *et al.* (US 5,852,096) is maintained {see Office action 3/2/10). For convenience, the relevant text of the claims {independent} finally rejected on 2/5/10 is listed below.

Claims 1-7 and 9-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones *et al.* (US 2002/0193463); or Jones *et al.* (US 2002/0193463) in view of Heindl *et al.* (US 5,852,096).

Regarding claims 1, 11, and 17: Jones *et al.* teaches a filler for dental composite materials (¶ 1-2, 9-10) comprising a polymerizable organic binder and a filler in a quantity of 5-35 weight% (¶ 65-68), wherein the filler particles are obtained by spray drying and have the shape of a doughnut {torus} with an average external diameter of 0.2 μm to 20 μm {with a mean size of 5 μm} [instant claims 1, 11, and 17] (¶29, 58); the filler particles undergo a heat treatment process at a temperature of about 600 ^{o}C {for about 24 h}, which completes the formation of holes within the discs and allows the smooth ovoid or round doughnut shaped particles to provide a lower residual stress within the matrix resin following polymerization (¶ 59). Jones *et al.* teaches the doughnut {torus} shaped filler particles are silanized (¶ 64).

Jones *et al.* does not teach post-curing the particles at a temperature of 800 – 1200 °C. However, the Office takes Official Notice that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) [MPEP 2144.05]. At the time of invention a person of ordinary skill in the art would have found it obvious to have optimized the furnace temperature, as taught by Jones *et al.*, as commonly practiced in the art, and would have been motivated to do so since the conversion of silica gel into silica glass, as well as the formation of holes in the discs of the composition is influenced by the temperature of the furnace.

Alternatively, Jones *et al.* does not teach post-curing the particles at a temperature of 800 – 1000 °C. However, Heindl *et al.* teaches silicon dioxide based filler for dental materials (1:5-10) wherein the filler is fired at 500 to 1000 °C after drying in order to reduce the percentage of silanol groups on the surface (3:5-15). Jones *et al.* and Heindl *et al.* are analogous art because they are concerned with a similar technical difficulty, namely the preparation of silicon dioxide based filler for dental materials. At the time of invention a person of ordinary skill in the art would have found it obvious to have combined firing at a temperature of 500 to 1000 °C after drying, as taught by Heindl *et al.* in the invention of Jones *et al.*, and would have been motivated to do so since Heindl *et al.* suggests that the firing provides a reduced percentage of silanol groups on the surface of the filler, yielding cured dental composites characterized by good mechanical properties, smooth surfaces, and very little wear on the dental antagonist (3:5-15).

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones *et al.* (US 2002/0193463); or Jones *et al.* (US 2002/0193463) in view of Heindl *et al.* (US 5,852,096).

Regarding claim 18: Jones *et al.* teaches a filler for dental composite materials (¶ 1-2, 9-10) comprising a polymerizable organic binder and a filler in a quantity of 5-35 weight%, wherein the filler particles are obtained by spray drying and have the shape of a doughnut {torus} with an average external diameter of about 5 μm and 15 μm (29, 58, 65-68); the filler particles undergo a heat treatment process at a temperature of about 600 °C {for about 24 h}, which completes the formation of holes within the discs and allows the smooth ovoid or round doughnut shaped particles to provide a lower residual stress within the matrix resin following polymerization (¶ 59). Jones *et al.* teaches the doughnut {torus} shaped filler particles are silanized (¶ 64).

Jones *et al.* does not teach post-curing the particles at a temperature of 800 – 1200 °C. However, the Office takes Official Notice that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) [MPEP 2144.05]. At the time of invention a person of ordinary skill in the art would have found it obvious to have optimized the furnace temperature, as taught by Jones *et al.*, as commonly practiced in the art, and would have been motivated to do so since the conversion of silica gel into silica glass, as well as the formation of holes in the discs, is influenced by the temperature of the furnace, which allows the smooth ovoid or round doughnut shaped particles to provide a lower residual stress within the matrix resin following polymerization (¶ 59).

Alternatively, Jones *et al.* does not teach post-curing the particles at a temperature of 800 – 1200 °C. However, Heindl *et al.* teaches silicon dioxide based filler for dental materials (1:5-10) wherein the filler is fired at 500 to 1000 °C after drying in order to reduce the percentage of silanol groups on the surface (3:5-15). Jones *et al.* and Heindl *et al.* are analogous art because they are concerned with a similar technical difficulty, namely the preparation of silicon dioxide based filler for dental materials. At the time of invention a person of ordinary skill in the art would have found it obvious to have combined firing at a temperature of 500 to 1000 °C after drying, as taught by Heindl *et al.* in the invention of Jones *et al.*, and would have been motivated to do so since Heindl *et al.* suggests that the firing provides a reduced percentage of silanol groups on the surface of the filler, yielding cured dental composites characterized by good mechanical properties, smooth surfaces, and very little wear on the dental antagonist (3:5-15).

Jones *et al.* does not specifically teach a method of filling cavities in teeth with the material. However, at the time of invention a person of ordinary skill in the art would have found it obvious to have filled cavities in teeth based on the invention of Jones *et al.*, and would have been motivated to do so since Jones *et al.* suggests that the composition is useful as a dental filling material (¶ 1, 27, 68).

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Pepitone whose telephone number is 571-270-3299. The examiner can normally be reached on M-F, 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on 571-272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MFP
5-August-10

/Mark Eashoo/
Supervisory Patent Examiner, Art Unit 1796